

Montana Weather/Precipitation Summary

February 2016 NOAA's National Weather Service Great Falls Montana

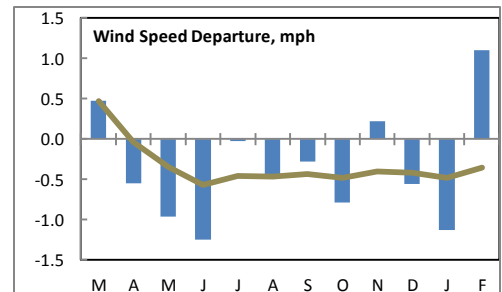
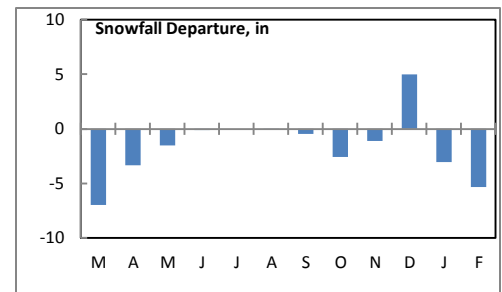
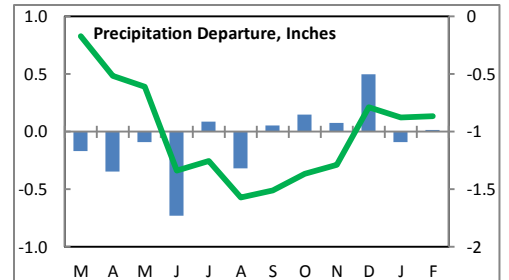
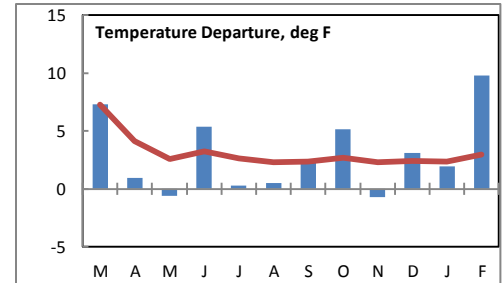
An El Nino influenced high pressure ridge dominated Montana for the month of February. This brought west to northwest warm and dry flow to the state. The ridge was quite a bit stronger than normal for February (Fig. 1). Temperatures were near normal in the southwest valleys and above normal elsewhere. There were periods of below normal temperatures in parts of the state for the first few days, and scattered during the rest, but for the most part, the month averaged above normal. A Havre, the entire month had above normal temperatures. Precipitation was mostly below normal, with areas of above normal in the eastern one-quarter and west. February's winds were well above the long-term average.

Statewide composite temperatures averaged 9.8°F above normal for the month. The red line on the graph to the right shows the cumulative 12-month departure from normal. The temperature anomalies ranged from +2.9°F at West Yellowstone to +13.0°F at Simpson (Hill) (Fig. 2). The warmest average monthly temperature was 41.2°F at Holter Dam, and the coolest was 20.7°F at Lake View (Beaverhead). This was the 2nd warmest February of record, and the warmest since 1991. For the past 12-months, the statewide composite average temperature is 3.0°F above normal. Ten of the last 12 months and 19 of the past 24 months have had warmer than normal temperatures.

The monthly departure from normal for precipitation across Montana is shown in Figure 3. Precipitation amounts were quite variable. Below normal precipitation was most common, however, there were areas of above normal in the eastern quarter and west. The highest amount recorded was 10.20-inches at Poorman Creek SNOTEL (Lincoln). Statewide, this month averaged 0.57", or 0.01" above normal. The statewide composite precipitation for the past 12 months is 0.87" below normal. The green line on the graph to the right shows the cumulative 12-month departure from normal.

With lighter than normal snowfall for the winter, and an especially light snowfall in February, snowfall totals remain on the lighter side. The monthly composite was 2.4", or 5.3-inches below normal (figure on right). This was the 2nd lightest February snowfall of record, and the lightest since 2005 (which was the lightest).

The statewide average winds were stronger than normal this month, ranking as the 25th windiest February of record. The statewide composite average was 10.2 mph, 1.1 mph above normal. The brown line of the graph to the right shows the 12-month cumulative statewide wind departure from normal. This was the highest February average since 2011. The 12-month average is running 0.4-mph below average. The fastest average speed was 20.7 mph at Livingston, with a higher elevation location, Deep Creek RAWS, recording 27.2 mph. This was Deep Creek's highest February average of record (began in 2004). The fastest measured gust of the month, 98-mph, occurred at Logan Pass on the 6th. Livingston recorded a gust to 79 mph on the 6th.



Refer to NEIC's State of the Climate report for the latest monthly discussion:
<http://www.ncdc.noaa.gov/sotc/>.

February 1-3

The month started out with a cooler period. Some areas of the southwest had below normal temperatures. Much of the rest of the state remained above normal. Snow fell in western Montana. Up to six inches fell in the Evaro and Flathead Lake areas. As this system moved east, the Red Lodge and Colstrip areas picked up around 5 inches of snow. This was one of the few snow producers during the month.

February 4-21

A very mild stretch prevailed during this time. A strong wind system swept the state on the 5th and 6th. Gusts reached 98 mph at Logan Pass on the 6th, while other gusts in the 70 mph range were measured at points across the state. Livingston gusted to 79 mph, a point south of Bozeman recorded a gust to 75 mph, while in the lee of the Little Rockies, a gust to 71 mph occurred. Several reports of vehicles blown over came in from the Miles City, Roundup and southern Phillips County areas. 6 – windy across the area, first with a cold front passage, then synoptic scale winds Logan gusted to 98 mph. On the 9th, the temperature reached the warmest of the month, 73°F at Choteau. This was not only a daily, but a statewide daily record high. The old record was 71°F at Hardin in 1996. This was also the warmest February day in Montana since 2006, when it was 73°F at Huntley.

Some freezing rain fell over northeast Montana on the 13th. On the 15th, gusty winds prevailed in the southwest, with gusts reaching 59 mph at Dillon, and 75 mph at higher elevations in the southwest. Another round of freezing rain occurred in north central Montana on the 16th. A cold front generated convection in southern Montana on the 18th. Some pea size hail was reported in the Bozeman area as these cells moved through.

A streak of 56 days with an inch or more of snow on the ground ended on February 7 at Helena. This was their longest such stretch since an 86 day period that ended in February 2010.

February 22-24

A brief period of cooler air spread over the state, dropping low temperatures to their lowest point in over a month in central Montana, but still above zero.

February 25-29

Warmer air returned. Temperatures were in the 60s in eastern Montana on the 26th through 28th. Huntley reached 70°F on the 27th. A cold front pushed across the state on the 29th. Some snow and precipitation fell over northeastern portions, and temperatures fell into a below normal range at Glasgow for the first time in the month.

Precipitation/convection

Severe convective weather occurred on zero days in February, which is normal.

Water Year

The temperature was 31.7°F or 3.8°F above normal. This was the warmest water year since 2000 and the 9th warmest of record.

The composite precipitation was 4.74 inches, 0.68" inches above normal. This is the 39th wettest water year to date, and the wettest since 2011.

Composite snowfall was 32.5" or 7.0" below normal. This is the lightest water year to date snowfall since 2005, and the 45th lightest of record.

Winds averaged 8.8 mph, the 16th calmest of record, and 0.2 mph below normal.

Winter Season (December – February)

For the winter season, December had near normal precipitation, with January and February recording below normal amounts. Temperatures were above normal all months. Winds were on the lighter side for December and January, but above normal for February.

For the 3-month period, temperatures averaged 26.6°F, 4.9°F above normal. This was the 10th warmest such period of record, and the warmest since 1991-92 (which was the warmest) (Fig. 4).

Composite precipitation was 2.57 inches, 0.44" above normal (Fig. 5). This was the 46th wettest winter season of record, and the wettest since 2013-14.

Snowfall averaged 25.5 inches, 3.4 inches below normal. This was the 48th lowest amount of record, and the lowest seasonal amount since 2004-05.

Composite winds averaged 8.9 mph, 0.2 mph below normal. This was the 14th calmest seasonal average of record.

February summary information:

High Temperature	73°F at Choteau (Teton) (9 th)	Greatest Precip	5.84" at Noxon
Low Temperature	-26°F West Yellowstone and Whiskey Creek (2 nd)		10.20" Poorman Creek SNOTEL
Warmest Ave Temp	41.2°F at Holter Dam	Peak Wind Gust	98 mph at Logan Pass (6 th)
Coollest Ave Temp	20.7°F at Lake View and West Yellowstone		79 mph at Livingston (6 th)
Range of Temp departures	+2.9°F at West Yellowstone to +13.0° at Simpson (Hill)	Highest Ave Wind	20.7 mph at Livingston 27.5 mph at Deep Creek RAWS
21 city mean monthly Temperature/Normal	34.0/24.2F 9.8F above normal. 2nd warmest of record (since 1880). 97 th percentile. Oct-Feb 31.7/27.9 3.8F above normal. 9 th warmest of record.	20 city mean monthly wind speed/Normal	10.2 mph/9.1 mph; 25 th windiest of record (since 1936). 68 th percentile. Oct-Feb 8.8 mph/9.0 0.2-mph below normal. 16 th calmest of record.
22 city mean monthly precipitation/Normal	0.57/0.56" – 101% of normal. 48 th driest of record (since 1880). 35 th percentile. Oct-Feb 4.74"/4.06" – 0.68" above normal. 39 th wettest of record.		

Historical Rank of Precipitation (inches) for the Current Month and Water Year to Date

Location	Feb	% of Norm	Rank	Pcntl	Oct 1 – Feb 29	% of norm	Rank	Pcntl	Years
Baker	0.59	184%			1.97	80%			18
Billings	0.09	16%	4	5	3.38	83%	64	55	115
Belgrade	0.23	51%	15	18	3.44	103%	47	59	79
Butte	0.13	30%	12	9	3.21	115%	77	63	122
Cut Bank	0.04	19%	9	7	2.40	170%	82	75	109
Dillon	0.03	13%	4	5	2.16	117%	58	76	76
Glasgow	0.27	104%	58	48	3.59	165%	106	91	117
Great Falls	0.03	6%	2	2	5.75	193%	119	96	124
Havre	0.10	36%	9	8	2.39	118%	60	44	136
Helena	0.16	53%	13	11	2.17	97%	35	25	138
Jordan	0.82	328%			4.95	241%			18
Kalispell	0.82	85%	48	39	6.35	101%	62	50	122
Lewistown	0.72	164%	94	62	3.58	102%	46	38	120
Livingston	0.17	34%	11	10	4.41	131%	84	74	113
Miles City	0.47	204%	92	66	2.07	96%	49	35	139
Missoula	0.48	69%	40	28	4.47	99%	57	41	136
Mullan Pass	4.98	159%	56	75	28.30	134%	60	80	75
Wolf Point	0.46	219%			2.23	110%			18
Glendive	0.53	166%	90	74	1.82	71%	35	29	117
Sidney	0.29	88%	44	57	1.76	60%	20	25	76
BZN-MSU	0.39	50%	28	20	5.84	107%	103	75	137

Rankings and Percentiles are 1=driest, higher numbers=wetter.

For an automated version of this chart, updated daily, go to

<http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS>

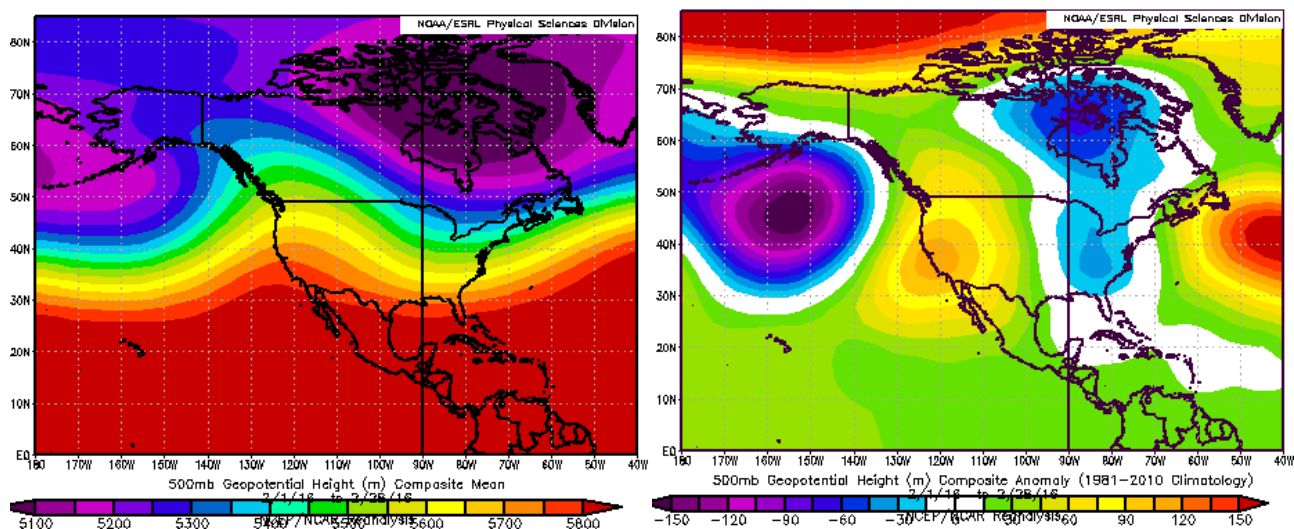


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (left) and departure from normal (right).

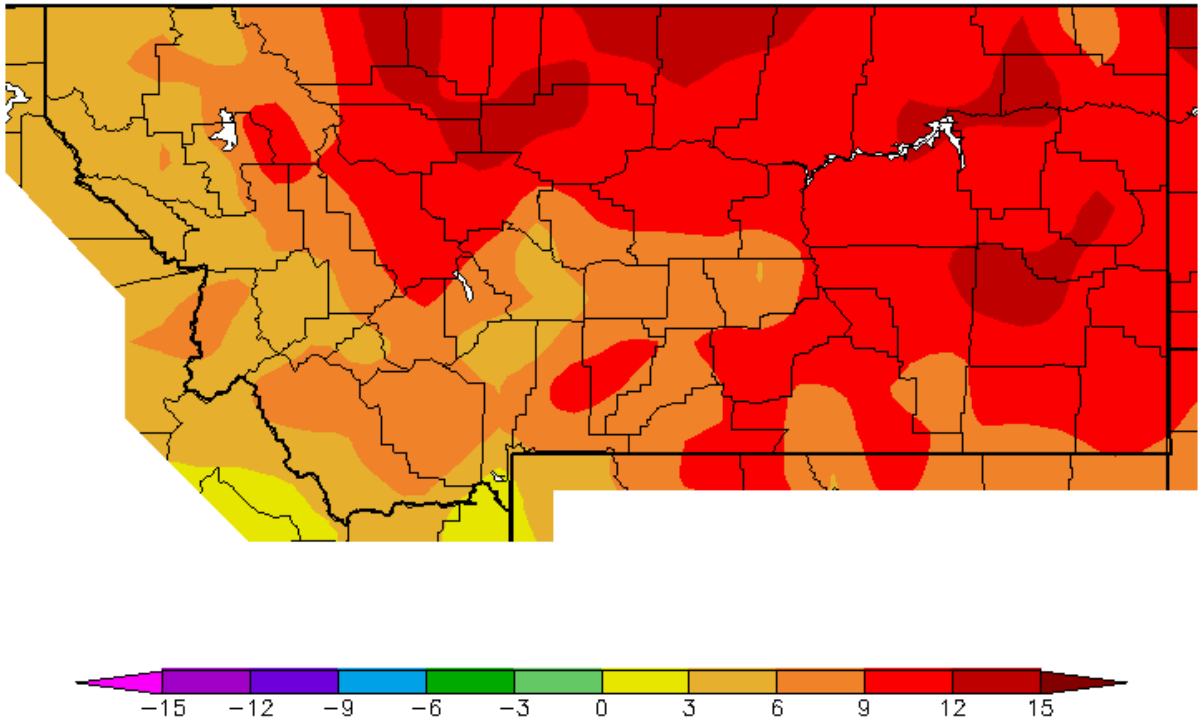


Figure 2. February 2016 temperature departures from normal (°F) (Western Region Climate Center).

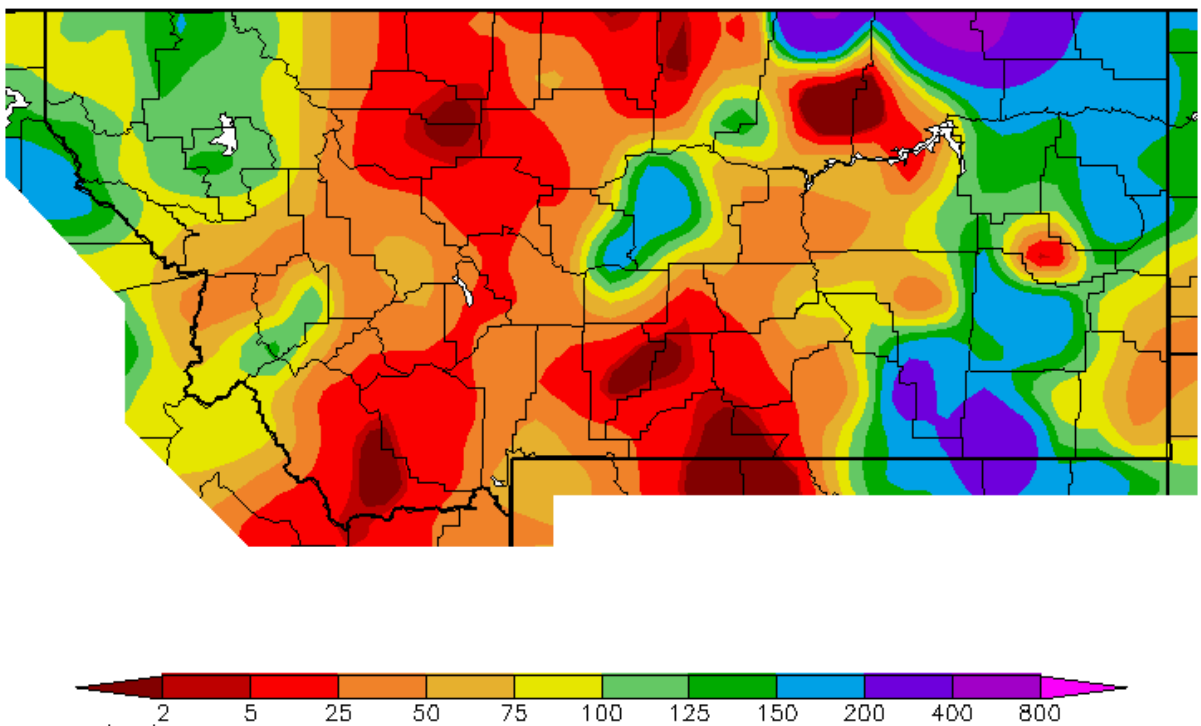


Figure 3. February 2016 precipitation departures from normal (percent) (Western Region Climate Center).

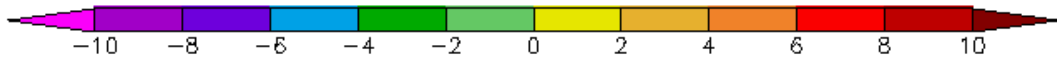
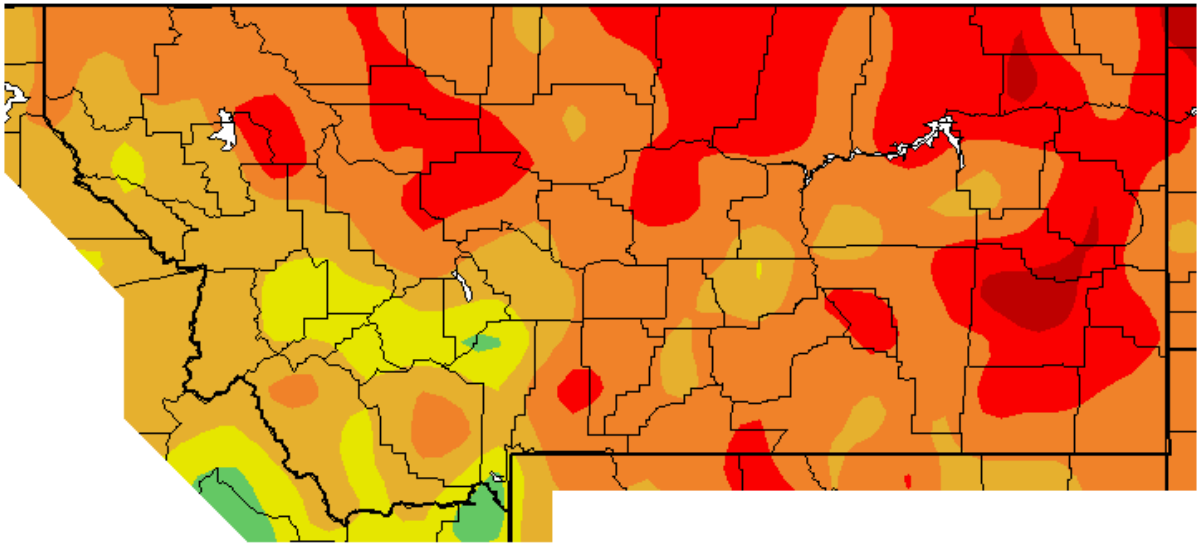


Figure 4. Dec 2015-Feb 2016 temperature departures from normal (°F) (Western Region Climate Center).

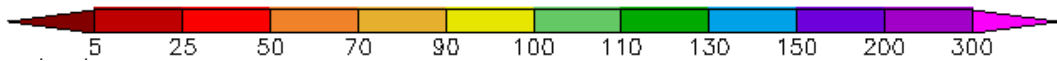
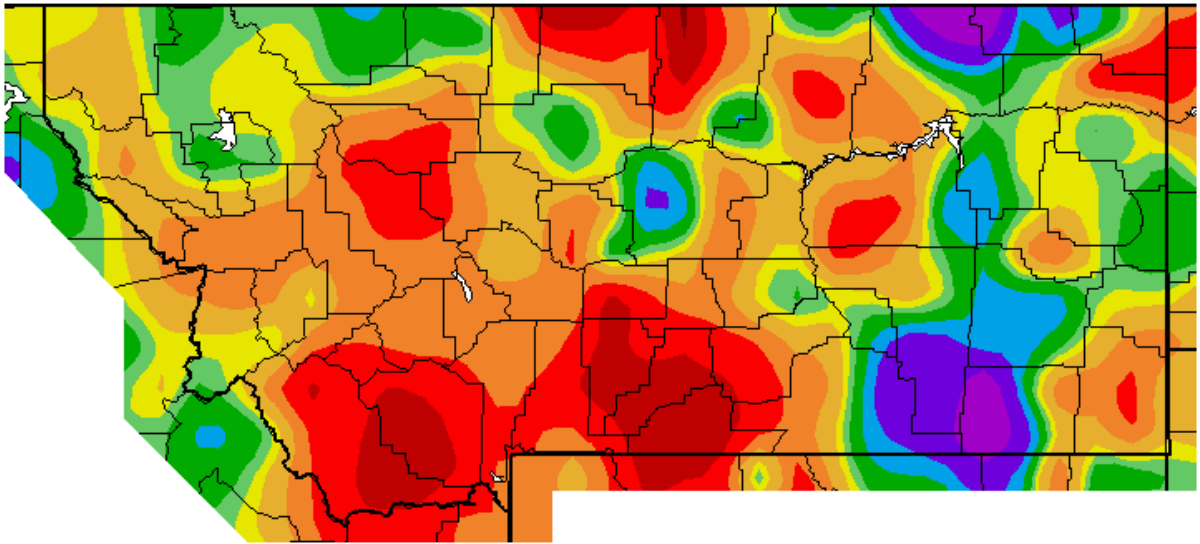


Figure 5. Dec 2015-Feb 2016 precipitation departures from normal (percent) (Western Region Climate Center).

For a state map of % of normal water year precipitation (updated around the 7th of each month), go to:
<http://www.wrh.noaa.gov/tfx/climate/monthlysum/climatesum.php?wfo=afx>

For the latest information on mountain snowpack from the NRCS, go to: <http://www3.wcc.nrcs.usda.gov/snow/index.html>

For the latest U.S. Drought Monitor, issued weekly by the National Drought Mitigation Center, USDA and NOAA, go to:
<http://droughtmonitor.unl.edu/>

These data are preliminary and have not undergone final QC by NEIC. Therefore, these data are subject to revision. Final and certified climate data can be access at the National Environmental Information Center (NEIC) <http://www.ncdc.noaa.gov>. Many more links are on

the Drought Information Page of the NWS Great Falls web site at <http://www.wrh.noaa.gov/tfx/main/drought.php?wfo=tx>. The climatological record for normals is 1981-2010. The ranking period for temperature, precipitation and snowfall is since 1880. The ranking period for wind speeds is since 1936. The ranking period for soil moisture is since 1995.